CLAIMS

1. A control method for controlling the fuel injection pressure of a common rail injection system of an internal combustion engine, said injection system comprising delivery means for supplying fuel under pressure to the common rail of said injection system, and for performing, at each engine cycle, a first and at least a second fuel delivery synchronously with respective fuel injections into said engine; a regulating device for regulating the fuel pressure in said common rail; and control means supplying said regulating device with a control signal to regulate the fuel pressure in said common rail; said control method being characterized by comprising the steps of:

determining a first value of a characteristic parameter of said control signal as a function of a required pressure value and of an actual pressure value in said common rail;

determining a second value of the characteristic parameter of said control signal as a function of said first value of the characteristic parameter, and as a function of a total correction coefficient;

causing the characteristic parameter of the control signal supplied to said regulating device to assume said first value during said first fuel delivery; and

causing the characteristic parameter of the control signal supplied to said regulating device to assume said second value during said second fuel delivery.

2. A control method as claimed in Claim 1, characterized in that said characteristic parameter of said control signal is the duty cycle.

3. A control method as claimed in Claim 1, characterized by comprising the steps of:

generating a static correction map containing a number of static correction coefficients, each relating to a respective engine operating point;

generating an adaptive correction map containing a number of adaptive correction coefficients, each relating to a respective engine operating point; and

determining the total correction coefficient for the current engine operating point as a function of the static correction coefficient and adaptive correction coefficient stored in said maps and relating to the same engine operating point.

4. A control method as claimed in Claim 3, characterized in that said step of determining said total correction coefficient comprises the step of adding the relative static correction coefficient and the relative adaptive correction coefficient.

5. A control method as claimed in Claim 3, characterized by comprising the step of updating said adaptive correction map as a function of the difference between the fuel pressure in said common rail after said second fuel delivery, and the fuel pressure in said common rail after said first fuel delivery.

6. A control method as claimed in Claim 5, characterized in that said step of updating said adaptive correction map comprises the steps of:

generating an adaptive update coefficient relating to the current engine operating point as a function of said difference in pressure; and

updating the adaptive correction coefficient in said adaptive correction map relating to the same operating point of the engine as a function of said adaptive update coefficient.

7. A control method as claimed in Claim 1, wherein the delivery means effect further fuel deliveries to the common rail in each engine cycle and in time with fuel injection to the engine; said control method being characterized by also comprising the steps of:

determining, for each said further delivery and as a function of the operating point of the engine, a respective total correction coefficient of the value of the characteristic parameter of the control signal calculated for the preceding delivery;

modifying, for each further delivery and as a function of the respective total correction coefficient, the value of the characteristic parameter of the control signal calculated for the preceding delivery, to generate a number of second values of the characteristic parameter of the control signal, one for each fuel delivery;

supplying said regulating device, during each of said further deliveries by said delivery means, with a control signal whose characteristic parameter assumes the relative said second value.